

CLAIMS

What is claimed is:

5 1. A method for a network node connected to one or more neighboring nodes in a network to acquire link state information from one or more neighboring nodes, the method comprising:

transmitting a first message from the network node to a first neighboring node, the first message referencing dummy link state information;

10 receiving a second message from the first neighboring node, the second message referencing dummy link state information, the second message corresponding to an acknowledgement of receipt of the first message by the neighboring node;

receiving one or more link state packets from the neighboring node, the one or
15 more link state packets corresponding to network link state information.

2. The method of claim 1, wherein the network node ignoring the second message.

3. The method of claim 1, wherein the first and second messages are IS-IS messages.

20 4. The method of claim 1, wherein the first message is a Complete Sequence Numbers Packet.

5. The method of claim 1, wherein the second message is a Partial Sequence Numbers Packet.

6. The method of claim 1, further comprising transmitting a third
25 message from the network node to a second neighboring node, the third message referencing dummy link state information.

7. The method of claim 6, further comprising transmitting a fourth message from the network node to the first neighboring node, the fourth message containing no reference to dummy link state information and directing the first neighboring node to transmit link state information not referenced in the fourth message to the network node.

8. The method of claim 1, further comprising receiving link state information and populating a link state database with the link state information.

9. The method of claim 1, further comprising using the link state information to generate a routing table.

10. The method of claim 1, wherein the dummy link state information references a non-existent network node.

11. The method of claim 1, wherein the dummy link state information references an unused identifier of the network node.

12. A method for a network node in a network to request link state information from one or more neighboring nodes, the neighboring nodes coupled with the network node, the method comprising:

maintaining in persistent storage information identifying one or more neighboring nodes;

restarting the routing control protocol, wherein restarting the routing control protocol clears the link state database;

transmitting heartbeat messages to one or more neighboring nodes, the heartbeat messages containing information from persistent storage identifying the one or more neighboring node to indicate that the network node is alive;

transmitting a first link state information request message to a first neighboring node, the first link state information request message referencing dummy link state information;

transmitting a second link state information request message to a second neighboring node, the second link state information request message referencing dummy link state information.

13. The method of claim 12, further comprising receiving a partial link state information request message from the second neighboring node, the partial link state information request message referencing dummy link state information, wherein receipt of the partial link state information request message acknowledges that the second neighboring node received the second link state information request message.

14. The method of claim 12, wherein transmitting the second link state information request message occurs after transmitting the first link state information request message.

15. The method of claim 12, wherein the first message is a Hello message.

16. The method of claim 12, wherein the second message is a Complete Sequence Numbers Packet.

17. The method of claim 12, wherein the third message is a Partial Sequence Numbers Packet.

18. The method of claim 12, further comprising generating a routing table with the link state packets from one or more neighboring nodes, wherein the routing table is generated when no link state packets have been received for a predetermined period of time.

19. A computer program product comprising a machine readable medium on which is provided program instructions for a network node connected to one or

more neighboring nodes in a network to acquire link state information from one or more neighboring nodes, the computer program product comprising:

computer code for transmitting a first message from the network node to a first neighboring node, the first message referencing dummy link state information;

5 computer code for receiving a second message from the first neighboring node, the second message referencing dummy link state information, the second message corresponding to an acknowledgement of receipt of the first message by the neighboring node;

10 computer code for receiving one or more link state packets from the neighboring node, the one or more link state packets corresponding to link state information in the network.

20. The computer program product of claim 19, wherein the network node ignores the second packet.

15 21. The computer program product of claim 19, wherein the first and second messages are IS-IS messages.

22. The computer program product of claim 19, wherein the first message is a Complete Sequence Numbers Packet.

23. The computer program product of claim 19, wherein the second message is a Partial Sequence Numbers Packet.

20 24. The computer program product of claim 19, further comprising transmitting a third message from the network node to a second neighboring node, the third message referencing dummy link state information.

25 25. The computer program product of claim 24, further comprising transmitting a fourth message from the network node to the first neighboring node, the fourth message containing no reference to dummy link state information and

instructing the first neighboring node to transmit link state information not referenced in the fourth message to the network node.

26. A network node connected to one or more neighboring nodes in a network, the network node comprising:

5 memory;

one or more processor coupled to memory, the one or more processors configured to transmit a first message from the network node to a first neighboring node, the first message referencing dummy link state information and receive a second message from the first neighboring node, the second message referencing dummy link state information, the second message corresponding to an acknowledgement of receipt of the first message by the neighboring node, the one or more processors further configured to receive one or more link state packets from the neighboring node, the one or more link state packets corresponding to link state information in the network;

15 an interface coupled with the one or more processors for transmitting and receiving the first and second messages and the link state packets.

27. The network node of claim 26, the one or more processors further configured to ignore the second message.

28. The network node of claim 26, wherein the first and second messages are IS-IS messages.

29. The network node of claim 26, wherein the first message is a Complete Sequence Numbers Packet.

30. The network node of claim 26, wherein the second message is a Partial Sequence Numbers Packet.

31. The network node of claim 26, the one or more processors further configured to transmit a third message from the network node to a second neighboring node, the third message referring to dummy link state information;

32. The network node of claim 31, the one or more processors further
5 configured to transmit a fourth message from the network node to the first neighboring node, the fourth message containing no reference to dummy link state information and instructing the first neighboring node to transmit link state information not referenced in the fourth message to the network node.

33. The network node of claim 26, further comprising a link state
10 database, wherein the received link state packets are used to populate a link state database.

34. The network node of claim 33, wherein the link state database is used to generate a routing table.

35. The network node of claim 26, wherein the dummy link state
15 information references a non-existent network node.

36. The network node of claim 26, wherein the dummy link state information references an unused identifier of the network node.

37. A network node comprising an operating system which is operable to acquire link state information from a neighboring network node, the network node
20 comprising:

persistant storage for maintaining information associated with one or more neighboring nodes;

memory coupled with persistant storage;

one or more processor coupled with memory, the one or more processors
25 configured to transmit heartbeat messages to one or more neighboring nodes, the

heartbeat messages containing information from persistent storage identifying the one
ore more neighboring node to indicate that the network node is alive, a first link state
information request message to a first neighboring node, the first link state
information request message referencing dummy link state information, and a second
5 link state information request message to a second neighboring node, the second link
state information request message referencing dummy link state packet.

38. The network node of claim 37, wherein the one or more processors are
further configured to receiving a partial link state information request message from
the second neighboring node, the partial link state information request message
10 referencing dummy link state information, wherein receipt of the partial link state
information request message acknowledges that the second neighboring node
received the second link state information request message.

39. The network node of claim 37, wherein transmitting the second link
state information request message occurs after transmitting the first link state
15 information request message.

40. The network node of claim 37, wherein the first message is a Hello
message.

41. The network node of claim 37, wherein the second message is a
Complete Sequence Numbers Packet.

20 42. The network node of claim 37, wherein the third message is a Partial
Sequence Numbers Packet.

43. The network node of claim 37, wherein the one or more processors are
further configured to generating a routing table with the link state packets from one or
more neighboring nodes, wherein the routing table is generated when no link state
25 packets have been received for a predetermined period of time.

44. An apparatus operable to acquire link state information from one or more neighboring nodes, the apparatus comprising:

means for transmitting a first message from the network node to a first neighboring node, the first message referencing dummy link state information;

5 means for receiving a second message from the first neighboring node, the second message referencing dummy link state information, the second message corresponding to an acknowledgement of receipt of the first message by the neighboring node;

means for receiving one or more link state packets from the neighboring node,
10 the one or more link state packets corresponding to link state information in the network.

45. The apparatus of claim 44, wherein the network node ignores the second message.

46. The apparatus of claim 44, wherein the first and second messages are
15 IS-IS messages.

47. The apparatus of claim 44, wherein the first message is a Complete Sequence Numbers Packet.

48. The apparatus of claim 44, wherein the second message is a Partial Sequence Numbers Packet.

20 49. The apparatus of claim 44, further comprising means for transmitting a third message from the network node to a second neighboring node, the third message referencing dummy link state information;

50. The apparatus of claim 49, further comprising means for transmitting a fourth message from the network node to the first neighboring node, the fourth
25 message containing no reference to dummy link state information and instructing the

first neighboring node to transmit link state information not referenced in the fourth message to the network node.

received